DESCRIPTION OF A NEW LYCÆNID BUTTERFLY, WITH NOTES UPON ITS LIFE-HISTORY.

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(With Plate.)

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As long ago as October 1897 we captured a female butterfly at Como, some thirteen miles south of Sydney. It suggested *Pseudodipsas cyrilus* of Anderson and Spry, but was of smaller size, frailer build, different shape, and with broader markings beneath. In February 1898 we caught another female in the same locality, and still another reached us from the Dandenong Ranges, Victoria, in November 1902. We took yet another of the same sex at Killara a few miles north-west of Sydney in January 1904.

Whether the female of the rare *P. cyrilus* was singularly variable, or whether the butterflies in question represented a quite distinct species, was a difficult question to determine, especially in the absence of the male. All doubts have now been cleared up by the discovery at Ocean Grove (Victoria) of the ova larvæ and pupæ of the smaller species, and the breeding from them of a long series of both sexes, constant in size, shape, colours and markings.

In October 1910 one of our fellow members, Mr. H. W. Davey, while searching ants' nests for Coleoptera, came across Lycænid larvæ, and from them bred *Miletus ignita* and a couple of examples of the butterfly that had puzzled us. The following year he sent us some pupæ of both species, and from these we bred in Gisborne a small series of each. In October 1912, under the guidance of Mr. Davey one of us visited Ocean Grove, Victoria, and secured a series of the eggs, larvæ and pupæ of both butterflies.

The ova of the Pseudodipsas we found in patches of 40 to 50 (evidently each patch the produce of a single female) upon small dead tree stumps within a plantation of Golden Wattle, *Acacia pycnantha*. Some of these patches of eggs were deposited upon stumps at least ten yards distant from the nearest *A. pycnantha* tree, and it seemed impossible that larvæ fresh from the egg could travel so far to the foodplant. Both larvæ and pupæ were found sheltering within the galleries of the nests of the little black ant *Iridomyrmex nitidus*, and these ants were present in each of the stumps upon which we noticed ova. We brought away not only ova, larvæ, pupæ, and two captured butterflies, but also two colonies of the ants with their larvæ and pupæ, and several of the smaller stumps. Both in Gisborne and in Sydney we bred from these pupæ a long series of both sexes of the butterfly. These emerged

from 30th October to 5th December, and easily determined it as an undescribed species.

The ova and larvæ were taken to Sydney and there watched carefully. The former hatched on 10th November and were at once provided with young *Acacia pycnantha* and eucalyptus foliage, but we could not induce them to eat either. Once we found them feeding upon slices of apple introduced in the breeding cage for the captive ants, but they did not thrive. We tried transferring some of them to a nest of *I. nitidus* in the open, but our efforts were resultless ; we were not successful in keeping them till the first moult.

We had better fortune with the twenty well-grown larvæ taken from the ants' nests at Ocean Grove. These would not touch the eucalypt, and fed but very sparingly upon the *A. pycnantha*, but they appeared to be fond of the apple. They pupated during November and the butterflies emerged from the 29th November to the 18th December.

Mr. Davey suggests that the ants feed the butterfly larvæ. In view of the distance many of the eggs were deposited from what appeared to be the foodplant, this seems feasible. The ants were continually running over the larvæ and cleaning them, but though we watched carefully for the feeding process we did not succeed in observing it. The small amount of apple, and the very small surface of *A. pycnantha* leaf eaten, seemed to be totally inadequate for the larvæ, if we might judge from the quantities of the same foods consumed in an adjoining breeding cage by the larvæ of *M. ignita*. Had the food supply been deficient, a proportion at least of dwarf imagines should have resulted : except for the few preserved for cabinet specimens, all twenty larvæ pupated : each one of these produced an imago and not one of these was of less than average size. The butterflies, both captured and bred from the pupæ, are very constant in size, so even a slight decrease of size in a series such as this would be easily noticeable.

Before describing the new species, the following life history notes appear worthy of record.

Ovum. White : height twothirds that of width : densely and very finely pitted : micropyle about onequarter the diameter of the egg. One patch of ova contained 35 deposited close together, and 13 others at a distance of about one inch. Other patches contained about the same number, so we concluded the 48 ova were deposited by the one female.

Larva. When freshly emerged these are pale cream in colour, with a black head and without visible markings. In the last instar they are of a general brownish colour with brown head : the dorsal surface is covered with a series of somewhat indefinite truncated whitish triangles narrowing towards the

head : each segment has an irregular pinkish brown line, and a series of brownish or greenish blotches. The larva is devoid of hairs, except for a few along the edges of the anterior segment within which the retractile head is withdrawn when resting. The spiracles are small and dark brown, and the anal plate is grey-brown : the dorsal honey-gland is single and rather inconspicuous. The movements are much more active than usual with Lycænid larvæ.

Pupa. Small : smooth : circular in cross section : of the usual Lycænid type : golden brown, with wing cases darkening to brown-black before emergence : attached by the tail and a central girdle, in groups of eight or ten, to the walls of the galleries of the ants' nests, or singly or in smaller groups within cracks of the dead tree stumps. Near the surface of a crack in one of the stumps brought from Ocean Grove was a single pupa : this stump we exposed to the sun and the pupa was placed close to the glass of the breeding cage : within a very few minutes the ants had sheltered it from the heat and light by filling the crack above it with a layer of rubbish.

Imago. The butterflies nearly all emerged on hot sunny days and always before noon. When resting on the stumps with only the undersurface of the wings exposed they were very inconspicuous. The ants ran about and climbed over the freshly emerged butterflies without in any way disturbing them. Neither sex had any definite precedence in emergence.

PSEUDODIPSAS MYRMECOPHILA, n. sp.

Expanse (centre of thorax to apex of forewing). Male, 11–12 mm. Female, 12–14 mm.

Forewing with costa slightly arched : apex rounded : termen slightly rounded in the male and rounded in the female. Hindwing with termen evenly rounded.

Male. Above. Forewing dark bronze brown : termen lined brown-black : cilia grey-brown. Hindwing dark bronze brown : base shading to brown-black : termen narrowly brown-black, with a narrow interrupted line, broader towards tornus, bright blue, and an obscure spot between vein 2 and vein 3, and a very obscure spot nearer tornus, brown-black : cilia whitish, at veins brown-black.

Beneath. Forewing grey-brown, markings pale brown edged brown-black and then whitish : first band across cell at onethird : second across cell at twothirds and often continued below cell : third marking end of cell : fourth, discal, broad, irregular, from vein 10 to vein 1 : fifth, brown, subterminal, narrow, interrupted, from vein 7 to vein 1 ; terminal line brown-black inwardly edged whitish. Hindwing grey-brown, markings pale brown edged brown-black and then whitish : first a spot in cell at onethird with a smaller spot above and

another below cell : second a spot in cell at twothirds, with a spot above and another below cell : third a bar marking end of cell : fourth, a discal, broad, irregular band of spots, from vein 8 to dorsum : fifth, subterminal, narrow, strongly waved : terminal line brown-black inwardly edged whitish : termen with a series of obscure spots orange, that at tornus, and that between vein 2 and vein 3, clearer, larger, and centred brown-black.

Female. Above. Forewing dark bronze brown : a broad central area, reaching costa beyond cell, reaching base and almost reaching tornus, blue : termen lined brown-black : cilia grey-brown. Hindwing blue : costa and apex broadly dark bronze brown : termen narrowly brown-black with a narrow line, broader towards tornus, blue, a spot between vein 2 and vein 3 and an obscure spot nearer tornus, brown-black : cilia whitish, at veins brown-black.

Beneath as in male : spots of discal band broader : obscure orange spots of termen of hindwing sometimes extending faintly into tornus of forewing.

Localities. Ocean Grove, October, November, December. Wandin. Sydney, October, January, February.

In order to avoid confusion between this species and *Pseudodipsas cyrilus*, we have drawn up a description of the latter species in similar terms : this description we have taken from the type series bred by Anderson and Spry.

PSEUDODIPSAS CYRILUS, Anderson and Spry. *Victorian Naturalist*, vol. xiv. (1897), pp. 5, 6, 7 (with figures).

Expanse. Male, 14 mm. Female, 16 mm. Forewing with costa almost straight : apex subacute : termen almost straight in the male and very slightly rounded in the female. Hindwing with termen slightly sinuate and produced between vein 2 and vein 3.

Male. Above. Forewing pale bronze brown : termen lined dark brown : cilia grey-brown. Hindwing pale bronze brown : termen very narrowly dark brown, with a narrow line from vein 1*a* to vein 3, bluish white, and a spot between vein 2 and vein 3 and another spot nearer tornus, brown-black : cilia whitish, at veins brown-black.

Beneath. Forewing pale brown, markings pale brown edged brown and then faintly greyish : first band across cell at onethird : second across cell at twothirds and continued obscurely below cell : third marking end of cell : fourth, discal, narrow, almost straight, from vein 10 to vein 1 : fifth, subterminal, brown, linear, from vein 7 to vein 1 : terminal line, narrow, brown. Hindwing pale brown, markings pale brown edged brown and then faintly greyish : first a spot in cell at onethird with a smaller spot above and another below cell :

second a spot in cell at twothirds with an irregular spot or spots above cell and a similar spot or spots below cell : third a bar marking end of cell : fourth a discal curved band of spots, from vein 8 to dorsum : fifth subterminal, narrow, waved : terminal line dark brown, towards tornus inwardly edged greyish : termen with a spot between vein 2 and vein 3, and another nearer tornus, brown-black crowned orange.

Female. Above. Forewing pale bronze brown : a central area, reaching subcostal, base, and dorsum to about twothirds from base, bluish : a bar at end of cell, pale bronze brown : termen lined dark brown : cilia grey-brown. Hindwing bluish : costa and apex very broadly, pale bronze brown : termen narrowly dark brown, with a narrow line from vein 1*a* to about vein 5, bluish white, a spot between vein 2 and vein 3, and another spot nearer tornus, brown-black : cilia whitish, at veins brown-black.

Beneath as in male : bands slightly broader and darker brown.

The markings of the undersurface are very much narrower in *P. cyrilus* than in the smaller *P. myrmecophila* : the shape of the hindwing readily separates the two species. *P. cyrilus* is probably but a southern race of *P. brisbanensis* Miskin, which is known by the type female only, taken, as the name indicates, near Brisbane. One Victorian female of *P. cyrilus* in our possession, differs very slightly indeed from the type *P. brisbanensis*, excepting that it is smaller.

EXPLANATION OF PLATE.

Pseudodipsas myrmecophila, n. sp. Figs. 1, 2, 3, male ; 4, 5, 6, female ; 7, 8, pupa.

Pseudodipsas cyrilus, And. and Spry. Figs. 9, 11, male ; 10, 12, female.

NOTE.—Figs. 9, 10, 11, 12, include the types, but no specimen was actually labelled as type.

GOVERNMENT ENTOMOLOGIST.—We are pleased to learn that Mr. Charles French, jun., who has been acting as head of the Entomological Branch of the Department of Agriculture since the retirement of his father, has now been permanently appointed to the position.

"THE AUSTRAL AVIAN RECORD."—The fifth number of this journal (December, 1912) is to hand, with further additions and alterations to the names of Australian birds. The editor, Mr. Gregory M. Mathews, has abandoned his idea of lumping species under fewer generic names, and proposes no less than forty-nine new genera. Latin words being scarce, many of the bird-lovers of the different States find themselves suddenly glorified with various endings to their names, such as Harriwhitea, Wilsonavis, Campbellornis, Melloria, Mattinleya, Coleia, &c. The trinomial list of birds is further extended, and many other alterations made.